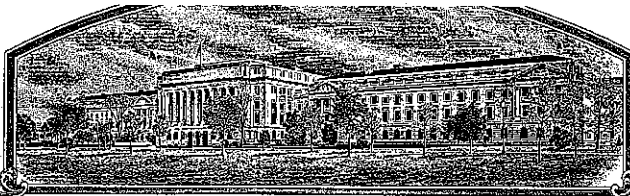


No.

9700394



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS, SHALL COME:

Pusch Agricultural Resources, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (49 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

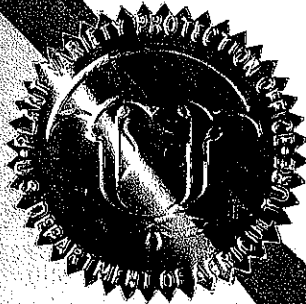
'Marlis'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twelfth day of September, in the year two thousand one.

Attest:

P. M. Zakarias

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)

BUSCH AGRICULTURAL RESOURCES, INC.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

Z028Y107A
B167A

3. VARIETY NAME

B107A
Marlis

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

3515 EAST COUNTY ROAD 52
FT. COLLINS, CO 80524 USA

5. TELEPHONE (include area code)

(970) 221-5622

6. FAX (include area code)

(970) 482-5965

FOR OFFICIAL USE ONLY

PVPO NUMBER

970039A

DATE
September 3, 1997

FILING AND EXAMINATION FEE:

\$ 2450.

DATE

Sept. 3, 1997

CERTIFICATION FEE:

\$ 320.00

DATE

8/31/01

7. GENUS AND SPECIES NAME

HORDEUM VULGARE L.

8. FAMILY NAME (Botanical)

GRAMINEA

9. CROP KIND NAME (Common name)

SPRING BARLEY

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)

CORPORATION

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

DELAWARE

12. DATE OF INCORPORATION

01-01-81

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

JOE GLASER
BUSCH AGRICULTURAL RESOURCES, INC.
3515 EAST COUNTY ROAD 52
FT. COLLINS, CO 80524
Thomas M. Wood
Busch Agricultural Resources, Inc.
10733 Sunset Office Drive, Suite 400
St. Louis MO 63127

14. TELEPHONE (include area code)

(970) 221-5622
314-909-3970

15. FAX (include area code)

(970) 482-5965

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

- a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of the Variety
d. ☒ Exhibit D. Additional Description of the Variety (Optional)
e. ☒ Exhibit E. Statement of the Basis of the Applicant's Ownership
f. ☒ Voucher Sample (2,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository)
g. ☒ Filing and Examination Fee (\$2,460), made payable to "Treasurer of the United States" (Mail to PVPO)

h. AGRONOMIC DATA

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)
☒ YES (If "yes," answer items 18 and 19 below) ☒ NO (If "no," go to item 20)

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☒ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "yes," give names of countries and dates) ☒ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s))

SIGNATURE OF APPLICANT (Owner(s))

NAME (Please print or type)

NAME (Please print or type)

CAPACITY OR TITLE

DATE

CAPACITY OR TITLE

DATE

Assoc. Plant Breeder

8-29-97

STD 470 (03-96) (Previous editions are to be destroyed)

(See reverse for instructions and information collection burden statement)

Purity & Multiplication

Exhibit A (revised March 2000)

ORIGIN AND BREEDING HISTORY OF B107A

Experimental Line Number: Z028Y107A

Pedigree: Alexis/3/Kimberly//Klages/Summit

Date of Cross: 1989

History:

The selection B107A originated in Fort Collins Colorado as an F4 headrow in 1991. A sub-sample of the F5 was selected in 1992 at Blois France and advanced to a first year yield trial in 1993 near Saultain France as experimental line number Z028Y107A.

This experimental line was tested under a second year replicated yield trial in Fort Collins Colorado in 1994. In the years 1995, 1996, and 1997 this experimental line has been tested in numerous locations throughout France, Spain, China, Korea, and Argentina, as well as the Western barley states of Idaho and Montana.

The main improvement objectives in the selection process of B107A include high yield, short straw with resistance to lodging, disease resistance to Powdery Mildew (Erysiphe graminis) as well as good malting quality.

B107A has been uniform and stable during the 3 generations of the final purification and multiplication process. No variants have been detected during this time and less than 1 per 1000 off-types have been detected.

A pedigree method of the purification and multiplication of B107A began with a 1995 F7 bulk in Fort Collins Colorado of which 100 heads were selected.

In 1996 16 of those 100 headrows planted in Fort Collins were selected for winter season increase in Argentina.

In August 1996, those 16 headrows were increased as 16 plots in Balcarce Argentina, rogued with 10% rejection. Four of the 16 plots were selected to produce 400 spikes for Fort Collins increase.

From those 400 headrows in 1997 Fort Collins, 355 headrows were selected and bulked to produce 1998 breeder seed. Certified seed will be available in the year 2000.

STATEMENT OF DISTINCTNESS

B107A is most similar to the spring barley variety "B1202" -- however it can be distinguished by the following morphological characteristics.

- B107A plant height is short.
B1202 plant height is medium tall.
- B107A has stem exertion of 0 - 3 cm.
B1202 has a stem exertion of 3 - 10 cm.
- B107A has a saucer shaped collar.
B1202 has a V-shaped collar.
- B107A has a parallel head shape.
B1202 has a strap head shape.
- B107A has a mid-dense head density.
B1202 has a lax head density.
- B107A has glume hair confined to a band.
B1202 glumes are completely covered with hair.
- B107A has a plant height of 73.2 cm.
B1202 has a plant height of 85.7 cm.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Barley)

OBJECTIVE DESCRIPTION OF VARIETY
BARLEY (*HORDEUM VULGARE*)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

BUSCH AGRICULTURAL RESOURCES, INC.

FOR OFFICIAL USE ONLY

PVPO NUMBER 9700594

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

3515 EAST COUNTY ROAD 52

FT. COLLINS, CO 80524 USA

VARIETY NAME OR TEMPORARY
DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (i.e. or) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

1 = SPRING 2 = FACULTATIVE WINTER 3 = WINTER Early Growth: 1 = PROSTRATE 2 = SEMIPROSTRATE
3 = ERECT

2. MATURITY (50% Flowering):

1 = EARLY (California Mariout) 2 = MIDSEASON (Betzes) 3 = LATE (Frontier)

No. of days Earlier than } 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON
 No. of days Later than } 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8 = B1202

3. PLANT HEIGHT (From soil level to top of head):

1 = SEMIDWARF 2 = SHORT (California Mariout) 3 = MEDIUM TALL (Betzes) 4 = TALL (Conquest)

Cm. Shorter than } 1 = BETZES 2 = CALIFORNIA MARIOUT 3 = CONQUEST 4 = DICKSON
 Cm. Taller than } 5 = PIROLINE 6 = PRIMUS 7 = UNITAN 8 = B1202

4. STEM:

Exertion (Flag to spike at maturity): 1 = 0 - 3 cm. 2 = 3 - 10 cm. Anthocyanin: 1 = ABSENT 2 = PRESENT
3 = 10 - 15 cm.

NO. OF NODES (Originating from node above ground)

Collar Shape: 1 = CLOSED 2 = V-SHAPED 3 = OPEN Shape of Neck: 1 = STRAIGHT 2 = SNAKY
4 = MODIFIED CLOSED OR OPEN 5 = SAUCER 3 = OTHER (Specify) _____

5. LEAF:

Basal leaf sheath (seedling): 1 = GLABROUS 2 = PUBESCENT Position of flag leaf (at boot stage): 1 = DROOPING
2 = UPRIGHT

Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY MM. WIDTH (First leaf below flag leaf)
3 = WAXY

CM. LENGTH (First leaf below flag leaf) Anthocyanin in leaf sheath: 1 = ABSENT 2 = PRESENT

6. HEAD:

Type: 1 = TWO-ROWED 2 = SIX-ROWED Density: 1 = LAX 2 = ERECT (Not dense)
3 = ERECT (Dense) 4 = MID DENSE

Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY
4 = OTHER (Specify) PARALLEL 3 = WAXY

Lateral Kernels Overlap: 1 = NONE 2 = AT TIP Rachis (Hair on edge): 1 = LACKING 2 = FEW 3 = COVERED
3 = 1/4 - 1/2 OF HEAD

7. GLUME:

Length: 1 = 1/3 OF LEMMA 2 = 1/2 OF LEMMA Hairs: 1 = NONE 2 = SHORT 3 = LONG
3 = MORE THAN 1/2 OF LEMMA

Hair covering: 1 = NONE 2 = RESTRICTED TO MIDDLE 3 = CONFINED TO BAND 4 = COMPLETELY COVERED

Awns: 1 = LESS THAN EQUAL TO LENGTH OF GLUMES 2 = EQUAL TO LENGTH OF GLUMES
3 = MORE THAN EQUAL TO LENGTH OF GLUMES

Awn Surface: 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

8. LEMMA:

5 Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS, AWNLESS ON LATERAL ROWS
 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike)
 5 = LONG (longer than spike) 6 = HOODED

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2 4 Awn Surface: 0 = AWNLESS 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

2 Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS 1 Hair: 1 = ABSENT 2 = PRESENT

1 Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE 2 Rachilla Hairs: 1 = SHORT 2 = LONG
 3 = TRANSVERSE CREASE

9. STIGMA:

2 Hairs: 1 = FEW 2 = MANY

10. SEED:

2 Type: 1 = NAKED 2 = COVERED 1 Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

3 Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.)
 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

4 Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

1 Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

0 0 PERCENT ABORTIVE

4 5 GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> SEPTORIA	<input type="checkbox"/> NET BLOTCH	<input type="checkbox"/> SPOT BLOTCH	<input type="checkbox"/> POWDERY MILDEW
<input type="checkbox"/> LOOSE SMUT	<input type="checkbox"/> BACTERIAL BLIGHT	<input type="checkbox"/> COVERED SMUT	<input type="checkbox"/> FALSE LOOSE SMUT
<input type="checkbox"/> STEM RUST	<input type="checkbox"/> LEAF RUST	<input type="checkbox"/> SCAB	<input type="checkbox"/> SCALD
<input type="checkbox"/> AY	<input type="checkbox"/> BSMV	<input type="checkbox"/> BYDV	<input type="checkbox"/> OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> GREEN BUG	<input type="checkbox"/> ENGLISH GRAIN APHID	<input type="checkbox"/> CHINCH BUG	<input type="checkbox"/> ARMYWORM
<input type="checkbox"/> GRASS HOPPERS	<input type="checkbox"/> CEREAL LEAF BEETLE	<input type="checkbox"/> OTHER (Specify)	
HESSIAN FLY RACES	0 GP	0 A	0 B
	0 D	0 E	0 F
		0 C	0 G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ DDT ☐ OTHER (Specify)

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	B1202	Seed size	B1202
Leaf size	B1202	Coleoptile elongation	B1202
Leaf color	B1202	Seedling pigmentation	B1202
Leaf carriage	B1202		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

FORM LFGS-470-5 (8-80) (REVERSE)

Exhibit D

BOTANICAL DESCRIPTION OF B107A

B107A is a two-row, early season maturing spring barley -- bred and developed by Busch Agricultural Resources, Incorporated in Fort Collins, Colorado.

Juvenile growth habit is erect. Plant color at boot is green with an upright flag leaf. Head shape is parallel and mid-dense in density with an erect head type. Neck is negative with a saucer collar. First rachis segment is bent back. Base of the first segment is a margin flange with hairs on the margin. Rachis shape is humped or raised with long hairs covering the edge. Glume length is one half the length of the kernel and glume hair is long and confined to a band. The glume awns are rough and equal to the length of the glume. Lemma awns are longer than the spike and rough. Lemma teeth are few on the outer lateral nerves. Lemma hair is absent and the base has a raised center. Lateral floret formation is convergent with rounded lemma tips. Seed is covered, mid-long to long, wrinkled with wax present. The aleurone is colorless. Palea tips are long. Rachilla length is one-fourth the length of the kernel with long hair thicker at the base. Ventral crease is V-shaped and lacks crease hairs.

B107A is a two-rowed variety adapted to Montana, Idaho and Wyoming.

Exhibit H
Exhibit D

AGRONOMIC DATA

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Statistical Table for Yield
(bushel per acre)

<u>Variety</u>	<u>MEAN</u>	<u>SD</u>	<u>DIFF</u>	<u>N</u>	<u>t</u>	<u>p</u>
B107A	124.6	22.9	+12.1	19	6.71	2.15 E-6
B1202	112.5	23.3				

Statistical Table for Plant Height
(centimeters)

<u>Variety</u>	<u>MEAN</u>	<u>SD</u>	<u>DIFF</u>	<u>N</u>	<u>t</u>	<u>p</u>
B107A	73.2	7.5	-12.5	14	6.71	2.05 E-6
B1202	85.7	3.7				

Statistical Table for Heading Date
(Julian Days)

<u>Variety</u>	<u>MEAN</u>	<u>SD</u>	<u>DIFF</u>	<u>N</u>	<u>t</u>	<u>p</u>
B107A	155.3	2.53	3.3	10	5.74	1.59 E-5
B1202	152.0	2.68				

Statistical Table for Powdery Mildew Resistance
(1 = resistant, 9 = susceptible)

<u>Variety</u>	<u>MEAN</u>	<u>SD</u>	<u>DIFF</u>	<u>N</u>	<u>t</u>	<u>p</u>
B107A	2.61	1.37	-1.89	9	3.91	0.0009
B1202	4.50	1.53				

Statistical Table for Lodging
(1 = resistant, 9 = susceptible)

<u>Variety</u>	<u>MEAN</u>	<u>SD</u>	<u>DIFF</u>	<u>N</u>	<u>t</u>	<u>p</u>
B107A	1.07	0.24	-3.47	15	5.79	1.4 E-5
B1202	4.53	2.00				

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

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STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

Busch Agricultural Resources, Incorporated is applicant for protection in this case being:

- a) The incorporated business registered in Delaware for and within regular employees have bred B107A
- b) The proprietary owner and intending commercial seller of B107A